



# GENERATION ZX(X) – Design Document

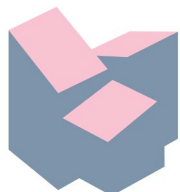




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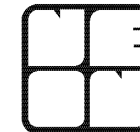


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# ABSTRACT

This document discusses the design and development of *Generation ZX(X)*, a hybrid multi-media event which explored how video games and performance can enhance and complement one another and enliven different types of historical data: oral herstories, lived experience, collective memory and audio-video archives.

*Generation ZX(X)* was a hybrid of live and virtual components: **an audiowalk**, a **social play session** (3 video games were developed and played in a pop-up arcade), a **film projection** and a **musical performance**. For *Generation ZX(X)*, I worked with third year Games and Art students and staff from Abertay University.

The event took place on the 4th May 2018, in Camperdown Park, and at the JTC Furniture Group – the former Timex Camperdown factory.

The event was developed as part of Mona Bozdog's SGSAH ARCS (Applied Research Collaborative Studentship) PhD - *Playing with Performance/ Performing Play. Creating hybrid experiences at the fringes of video games and performance.*

The project engaged with the living memory and heritage of the Timex factory in Dundee, and its aim was to reclaim and rewrite the history of the charged site on Harrison Road and to challenge the 'official' history of the local games industry. The project explored the hidden figures of the video games industry: the women who assembled the ZX Spectrum computers in the Timex factory in Dundee, and the ramifications that this labour had for the city's development as one of UK's leading games development and education centers.







# RESEARCH SIGNIFICANCE

The project explored how video games and performance can complement and enhance one another in hybrid events through a cross-disciplinary design framework called storywalking. Storywalking draws from site-specific performance, Verbatim techniques and game design practices to combine walking as an aesthetic, critical, and dramaturgical practice of reading and performing an environment, with designing complex, sensory and story-rich environments for a moving, meaning-making body.

These environments are layered (the aesthetic of the palimpsest) and incomplete (the aesthetic of the ruin) thus inviting the audience/player to complete the work by adopting different modes of engagement in the process of making-meaning: reading, writing, walking, playing, sensing, watching and interpreting.

Storywalking invites a critical engagement with the site and its remembered and lived past, enlivening the archive and transforming oral histories, lived experience and collective memory into gameplay. The direct use of the framework in the context of charged sites and living memory gestures towards its potential applications in cultural heritage contexts, exploring heritage sites and their stories.





# RESEARCH BACKGROUND

This research comes at a point in time when virtual reality seems to be the future of entertainment, a future which focuses on virtual experiences and bodies instead of seeing the potential of merging the virtual with the physical. In this sense, this research is not of its time, but rather against it, which makes it equally timely. On the other hand, the popularity of immersive theatres, Secret Cinema, Escape the Room, *Pokemon Go* (Niantic, 2016), *Ingress* (Niantic, 2013) etc, seems to testify to audiences' inclination towards an entertainment experience that fully engages the body. With the increase in these hybrid forms of performance and the upsurge of first-person games and immersive performance practices, it is hard to ignore audiences' underlying desire for participation and for experiencing an alternative (story)world from within.

The overlaps between performance and video games seem to be the new direction for contemporary practices as well <sup>1 2 3</sup>, as evidenced by increased interest from research funding bodies, practitioners and academic institutions<sup>4 5</sup>. These seem to suggest increased interest and enthusiasm for these interdisciplinary practices to which I hope that this research project will contribute.

Through this research project, I argue that designing for the moving body in mixed reality environments can lead to new hybrid forms of storytelling, and challenge artists to engage with and design for both the sensory abilities of the physical body, as well as the invulnerability and endless reach of the virtual one. This transition is made possible by a strong fictional world that incorporates both physical and virtual environments. In turn, these environments ground and enrich the fictional world and contribute their own aesthetics and design opportunities.

1. [https://www.mediamolecule.com/blog/article/punchdrunk\\_and\\_media\\_molecule\\_where\\_dreams\\_collide](https://www.mediamolecule.com/blog/article/punchdrunk_and_media_molecule_where_dreams_collide)
2. <https://www.theguardian.com/games/2019/feb/08/playable-shows-are-the-future-what-punchdrunk-theatre-learned-from-video-games>
3. <https://immersivedesignsummit.com/>
4. <https://ahrc.ukri.org/newsevents/news/ahrc-to-fund-32-projects-that-will-lead-the-way-for-future-immersive-experiences/>
5. <https://ktn-uk.co.uk/news/immersive-economy-in-the-uk-report-launches>



# RESEARCH AIMS & QUESTIONS



Kayleigh MacLeod Art

Using a practice as research methodology, the project addressed the question of how game design and performance practice can both inform and contribute to the development of new and hybrid experiences that explore the complexities of sites and that capture, preserve and share oral herstories, lived experience and collective memories.

Generation ZX(X) aimed to:

- Develop a design framework for hybrid experiences which draws from both performance and game design methods
- Use the framework to create a complex experience that reconciles the meaningful agency provided by video games with the meaningful sensory and narrative dimension of performance
- Understand what aspects of the archive can be enlivened through gameplay and which are better suited to be experienced through performance.
- Understand how different modes of engagement facilitate different experiences to create a complex multi-sensory experience.
- Understand how dramaturgy can ensure coherence and continuity of meaning across multi-media, mixed-reality components.
- Balance the solitary experience of gameplay with moments of conviviality and community



# METHODOLOGY



In working across performance and video games I explored various models of experience design. The resulting event responded to a 'memory site' (Nora, 1996) by inviting the audience/players to engage with and uncover the lived collective memory repositied there through live performance and live gameplay. The audience/players performed an open dramaturgy by embracing different modes of engagement and meaning-making: walking, playing, watching, listening, performing.

Due to the devised nature of the project (an assemblage/archive of different and sometimes contradictory elements: archival footage and photographs, newspaper clippings, urban legends, oral histories, 'official' histories, game concepts, lived memories and personal and 'official' narratives) a continued and parallel process of dramaturgy was necessary to ensure the continuity and coherence of meaning across all the project's components.

The methodology consisted of parallel but interconnected processes of

- sustained theoretical inquiry
- critical play
- assembling the archive
- devising
- Verbatim
- Game design and prototyping
- iterative development
- dramaturgy



# DESIGN FRAMEWORK STORYWALKING

The narrative arc was developed as a storywalk, a story which is performed by the walking body of audience/players as they assemble the narrative elements designed in the performance and the video games. I developed storywalking as a technique which draws from site-specific performance and game design to combine walking as an aesthetic, critical, and dramaturgical practice of reading and performing an environment, with designing interactive, complex, sensory and story-rich environments for a moving, meaning-making body.

Storywalking encapsulates all of the elements that I wanted to explore through the development of *Generation ZX(X)*:

- an open dramaturgy which accommodates and facilitates a multiplicity of 'readings'
- the aesthetic of the ruin and the aesthetic of the palimpsest in video games and performance, and how they invite the audience/player to complete the work by focusing their attention on what is missing, or has been erased or threatened by erasure or rewriting
- the complex relationship between the work and the site, the 'ghost' and the 'host' (McLucas in Kaye, 2000; Pearson, 2010)

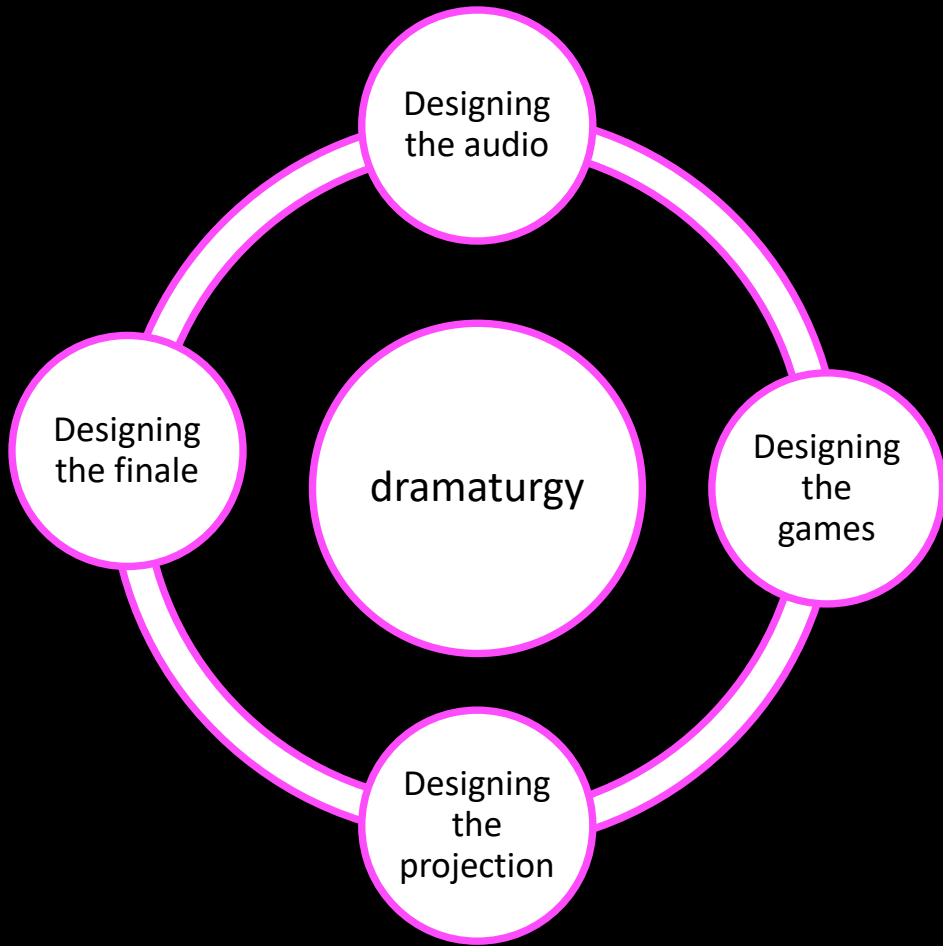


# STORYWALKING FRAMEWORK

<b>Practices</b>	<p>Performance Practices:</p> <ul style="list-style-type: none"><li>• Immersive Theatre</li><li>• Site-specific Performance</li><li>• Walking Performance</li><li>• Mixed-Reality Practices</li></ul> <p>Game Design</p> <ul style="list-style-type: none"><li>• Walking Sims</li><li>• Retro Games</li><li>• Co-located games</li><li>• Custom and alternative controllers</li></ul>	<b>Processes</b>	<p>Dramaturgy</p> <p>Devising</p> <p>Assemblage</p> <p>Pruning</p> <p>Narrative Design/ Creative Writing/ Playwriting</p> <p>Verbatim and Documentary Techniques</p> <p>Critical Play</p> <p>Deconstructing/ Reverse-Engineering Design</p> <p>Ambiguity and Open-ness (in design and writing)</p> <p>Design for Spectatorship</p> <p>Sensory Design</p> <p>Remediation</p> <p>Adaptation</p> <p>Trans-media storytelling</p> <p>Game-responsive design</p> <p>Site-responsive design</p> <p>Creating a world (in-its-own-world aesthetic)</p>
<b>Modes of Engagement</b>	<p>Walking</p> <p>Playing</p> <p>Listening</p> <p>Reading</p> <p>Performing</p> <p>Sensing</p> <p>Watching</p>	<b>Aesthetics</b>	<p>(Syn)aesthetics</p> <p>Walking</p> <p>Palimpsest</p> <p>Ruin</p> <p>Nostalgia</p> <p>Mythogeography</p> <p>Storywalking</p>



# RESEARCH PROCESS



Developing Generation ZX(X) involved complex processes of devising site-responsive and documentary work, game design and dramaturgy which demanded that various design strategies, techniques and tools were deployed in the creation of the work. *Generation ZX(X)* was a hybrid of live and virtual components, an audiowalk, a social play session, a film and a musical performance.

The design process had four stages: designing the audiowalk, designing the games, designing the projection and designing the final musical performance, all underlined by a dramaturgical process which ensured continuity and coherence across all the project's components. These four stages developed simultaneously and informed each other.

Developing the games and the performance in parallel allowed me to design elements of continuity: narrative (the many aspects related to Timex: work in Timex, the strikes, assembling the ZX Spectrum, the ZX Spectrum heritage and its impact on the games industry), visual (the character Pinkie, the picket-signs, the girly punk aesthetic, the ZX Spectrum aesthetic), conceptual (women's voices, memory sites, palimpsest, ruin, nostalgia, collective memory).





# CONCEPT

The development and implementation of *Generation ZX(X)* was underpinned by a curiosity to explore how I can devise a hybrid form of storytelling which takes advantage of the affordances of both game design and performance practices.

In making *Generation ZX(X)* I discovered that some aspects of the archive lend themselves better to gameplay (the monotony and repetitiveness of work, historical context, visual references, conviviality, unruliness and playfulness) whereas others could come to life through performance (the texture of voices and richness of dialect and speech, community, intimacy, confession, memory).

The moments of gameplay aimed to support conviviality, camaraderie and social play through a design for spectatorship approach (Love and Bozdog, 2018). In turn, the performance created an overall framework for the experience launching an invitation to embodied interaction. Performance and gameplay thus supported, contextualised and expanded each other narratively and aesthetically.

Developing the games and the performance in parallel allowed me to design elements of continuity: narrative (the many aspects related to Timex: work in Timex, the strikes, assembling the ZX Spectrum, the ZX Spectrum heritage and its impact on the games industry), visual (the character Pinkie, the picket-signs, the girly punk aesthetic, the ZX Spectrum aesthetic), conceptual (women's voices, memory sites, palimpsest, ruin, nostalgia, collective memory).

In terms of working with (memory) sites (Camperdown Park, Harrison Road, Timex Camperdown factory building) I was constantly trying out configurations for the audiowalk, the pop-up arcade, the projection and the choral performance.

# SITE RESPONSIVE DESIGN

In 1993, after more than eight months of bitter disputes, Timex closed its gates in Dundee. This has become one of the most painful moments in the city's history, and for more than two and a half decades, strike action and Timex have never been separated. The increased visibility of this narrative has overshadowed others, particularly the gender divide in the factory, and the pay, training and opportunities divided along those lines.

The factory building stands as a symbolic memory of something that has disappeared, Nora's site of memory (1989) which encompasses numerous narratives: the 'golden age' of Dundee's industrial age, a time of economic growth, community and solidarity around workers' rights, a time when workers found a voice and power in union action. I wanted to tap into this symbolic significance of the site and the collective memory that surrounds it. The Timex building is a different type of ruin, a perfectly preserved one, a body which has been 'possessed' by a new 'soul'. The inside of the factory has changed, but the outside of the building is still the same. Its previous life still lives in the memory of those who knew it, whose absence is felt in its very physical presence. *Generation ZX(X)* confronted the audience/players with this presence to summon the repressed memories caused by its absence which is why it was important to interact with the façade of the building rather than the inside. The building stands in defiance of time, aided by its B-listed status. This facade forces the city to remember and keeps the collective memory around it alive.

Setting the finale on the site was of paramount importance because the site remembers, memory, history and space are intrinsically bound: "Even the landscape takes on a different quality if you are one of those who remember. The scenery is then never separate from the history of the place" (Williams, quoted in Pearson, 2006, p.13) which is why I wanted to facilitate a recovery of those memories, to bring them back to the surface so that they can be discussed, critiqued, made sense of collectively and then written over by new, more hopeful, memories of the site. This is only possible if one envisions the site as an open palimpsest and each occupation of that space as a rewriting: "Each occupation, or traversal, or transgression of space offers a reinterpretation of it, even a rewriting. Thus, space is often envisaged as an aggregation of layered writings – a palimpsest." (Turner, 2004, p. 373).



# WALKING



Erika Stevenson Photography



# DESIGNING THE AUDIOWALK

Over the course of an hour the audience/players explored the park in groups in search of snippets from these interviews. These sound files were positioned in various locations around the park, a balloon marking the place where a specific sound file should be played. The number on each balloon corresponded to the number of the audio file on the audience/players' phones, 208 files in total. The balloons were colour-coded, each colour corresponded to an interviewee. The audio files were selected from 7 interviews with 11 former Timex employees (all women) which amounted to over 12 hours of recorded material. The interviews were informal discussions, structured around a series of open-ended questions thematically linked: personal background information, the work, the work environment, camaraderie and impact. I grouped the audio files in five categories: 'Three words', 'Working on the computers', 'Working in Timex', 'The strikes' and 'Fun and friendship'. Each category was mapped to a certain area in the park. The importance of these oral histories cannot be understated as they capture the lived history of Timex and Dundee, as well as the assembly process of the ZX Spectrum.

Inter-generational groups formed around technology: younger audiences had smartphones and used them as speakers for older audiences; in return older audiences shared their lived histories and stories of Timex with the younger audiences. They explored and played together, negotiated a comfortable pace and direction for walking and playing, and exchanged skills and stories while contributing to each other's experience. The event then became the space for an inter-generational encounter, where audiences came together to share an experience around video games and performance.





Erika Stevenson Photography



**PLAYING**

## DESIGNING THE GAMES

After the park exploration the audience/players were escorted to the JTC Furniture Group building (the former Timex Camperdown building), where a pop-up arcade was set up. This consisted of two arcade cabinets offered by We Throw Switches and designed by Alice Cranegie and Ursula Cheng and a custom built installation. The arcade cabinets housed a platformer game called *She-Town* and the custom built installation a button-smashing assembly line game called *Assembly*. The games were designed by a team of Abertay 3<sup>rd</sup> year Games and Arts students called Retrospect. The games were supervised and co-designed by Dayna Galloway and Mona Bozdog. A third game was projected onto the Timex building. This was a crowd-controlled movement game called *Breaking out of the Frame* and it was developed by Niall Moody, with art by Kayleigh MacLeod and concept design by Mona Bozdog.

The games responded to the documentation and engaged with different aspects from the oral history archives. *She-Town* told the history of she-town, following the thread of female labour which runs through the history of Dundee. *Assembly* captured the repetitiveness and monotony of assembly work while at the same time supporting team-play and conviviality. *Breaking out of the Frame* uses movement in a symbolic gesture of uncovering and recovering those stories hidden in the site.

The games facilitated community formation and conviviality through a performative design (design for spectatorship), and a co-located, collaborative and physical play experience. The boisterous, social and convivial atmosphere of Timex was recreated/evoked through the games. The pop-up arcade represented the playfulness of Timex with the red brick building as a backdrop while the games recreated some of the social aspects of life in the factory. The audience performed the playfulness and camaraderie of Timex through gameplay.

Crossing the factory gates became an opportunity to write over the memories of the strikes by unearthing older memories of conviviality and sisterhood, of a factory where nearly 2000 women worked, sang and played together. By playing at and on the Timex building we were subverting official history through play, and rewriting the memory of the site.



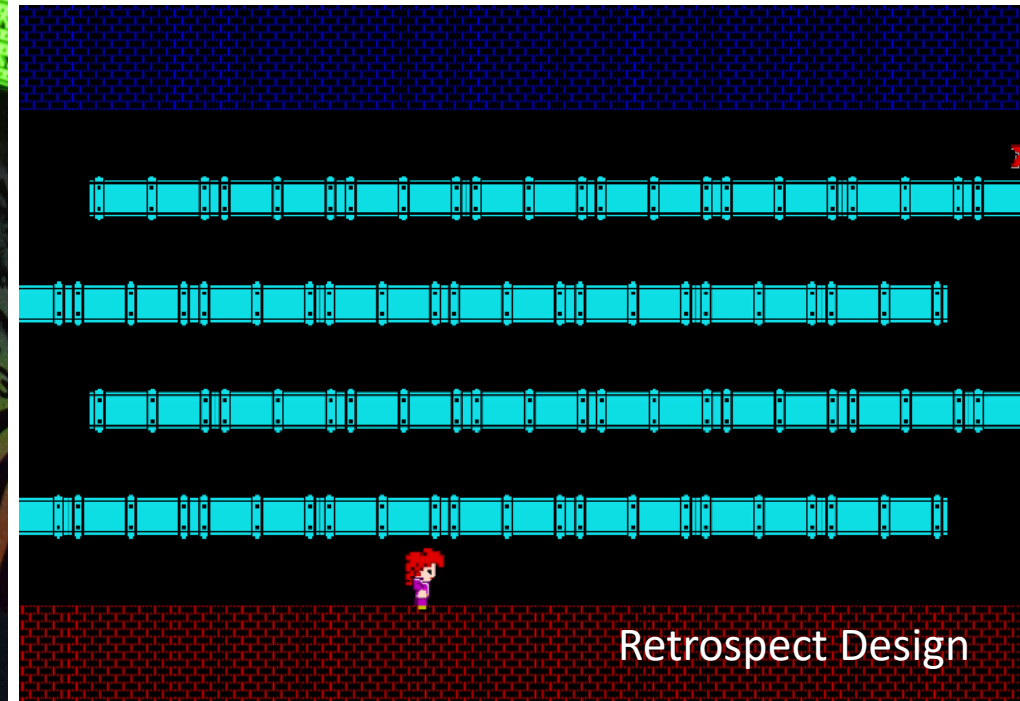


# SHE-TOWN

You know that you'll be safe here, She-Town  
belonged to them. And that's the way it's been  
since those first bales of jute docked in 1820.  
Even further back, to the women weaving linen in  
the flax mills. Perhaps even further back to the  
housewives who spun and sold their yarns at  
markets. There's no sure way of knowing how far  
back the story of She-Town stretches.



PRESS 'SPACE' TO CONTINUE



Retrospect Design

# SHE-TOWN

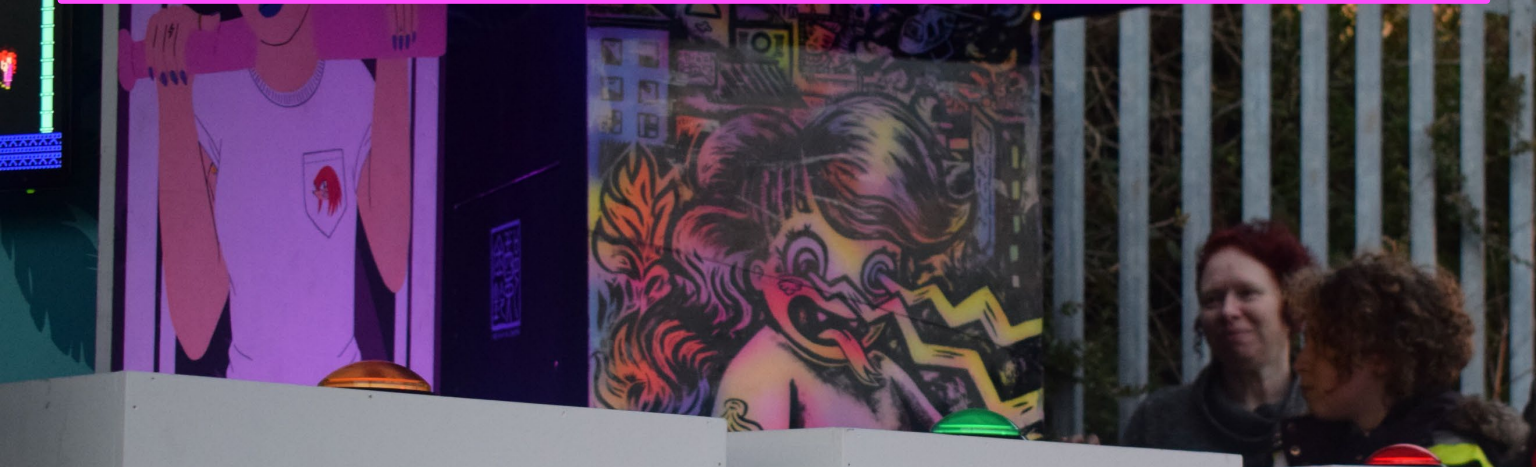
*She-Town* is a single-player platformer in which the player guides an avatar in a pink uniform called Pinkie through five factory levels to collect the five letters that spell 'Timex'. Each letter rewards the player with text that tells the story of She-Town, from its shipbuilding and whaling industries to the jute industry, the manufacturing industries (Timex and NCR) and finally to its most recent creative industries. *She-Town* uses the 'WASD' control scheme and Backspace for horizontal jumps. This was intended to recreate the keyboard-only control schemes of Spectrum games for the players who were familiar with them, while at the same time to be easy to control for new players.

The arcade cabinets fulfilled similar aesthetic, dramaturgical and accessibility functions to those of the custom-built installation for *Assembly*: they were colourful and bold, visually reinforcing the themes. The size and angle of the monitors alongside the colourful design and lights invited and supported external and semi-spectatorship by pulling players in and allowing an over-the-shoulder viewing angle, and the arcade aesthetic was familiar and thus less intimidating for a wider demographic. This type of design and curation which encourages semi-spectatorship not only enhances the game's potential for social play leading to bonding and community formation but also reduces the anxiety and intimidation of participation, making the game more inclusive, inviting and accessible.

The game's aesthetic and design reference both the ZX Spectrum and arcade games and anchor the audience/players' experience in a certain moment in time and space, namely the early 80s when the ZX Spectrum was built in the Timex factory. The game's nostalgic design and aesthetics paid homage to the heritage of the ZX Spectrum and was intended as a celebration of its influence and impact. Robin Sloan defines a nostalgic video game as "any contemporary game that explicitly incorporates past aesthetics, design philosophies, or emulated technical limitations" (Sloan, 2016a). *She-Town's* visual style, level design, sound design and gameplay conspire to create a nostalgic feeling for the ZX Spectrum games, the joy and sometimes frustration associated with them. The student team were invited to respond to the level design of two games developed for the ZX Spectrum: *Chuckie Egg* (Nigel Alderton, 1983) and *Manic Miner* (Matthew Smith, 1983). While the visual style (colour palette, shapes, assets, platforms, level border) and level design are an evident homage to these games, the User Interface (UI), gameplay, sound design and "game feel" (Swink, 2009) were directly inspired by arcade games, particularly *Bubble Bobble* (Taito, 1986).



# ASSEMBLY



Graeme Bletcher Photography



The installation was designed for three players, each player works on one component and then passes it on to the next player. This echoed the highly specialised labour in Timex and mirrored the assembly line functionality.

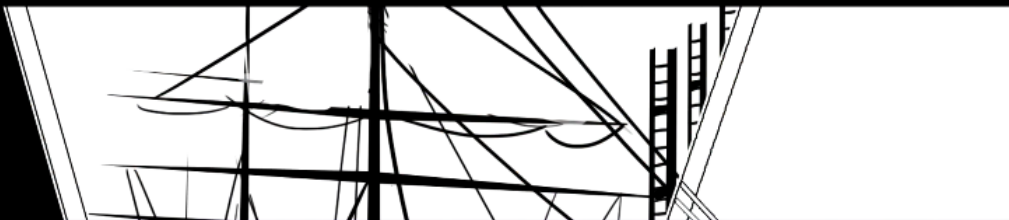
To make the game as accessible as possible I wanted to use intuitive controls and a large display screen which is why Niall Moody and I decided to choose large and colourful arcade buttons as controllers, and 22-inch monitors, which gave us a larger display than a mobile screen. Playing the game on a monitor was in keeping with the ZX Spectrum aesthetic in terms of output, whilst the button smashing evoked 80s arcade interactions. The installation supported the presence of an audience by allowing an over-the-shoulder viewing angle which was part of a design for spectatorship strategy. Slamming a TV to make it 'work' is still an evocative gesture for everybody who had a TV or played a game on a TV in the 80s. We tapped into this satisfying and evocative gesture by placing the buttons on the top and the left side of the monitors. To protect the monitors and recreate the CRT boxy aesthetic style we encased them in a white cabinet which also made the buttons stand out.

## ASSEMBLY

I opted for a bold and 'girly punk' aesthetic for the game which is why I used animal-print pink faux-fur for dressing the 'assembly line' and the chairs. This is a visual tribute to the women of Dundee, often described as strong, independent and feisty. Pink was also the colour of the Timex new-starts uniform (known as Pinkies) that all the women that I have interviewed remember fondly.

The game is big, loud and pink, drawing attention to itself and the players. Spectators can watch other players and learn how to play by watching, so the game is designed to work as a tutorial for future players. But by watching others play and understanding how the game works ahead of playing, the game becomes less intimidating so the barrier to entry is lowered. This makes the game accessible to a larger and more diverse audience. There is no previous skill requirement to pressing a button. Its whimsical design – the game communicates loud and clear that it is to a certain degree a silly game not meant to be taken too seriously – aims to counteract the inhibiting and intimidating effect that technology can sometimes have. All of these elements contributed to the game's abilities to act as a catalyst for community formation (Love, 2018; Love and Bozdog, 2018), camaraderie, conviviality and togetherness (Wilson, 2012).





Kayleigh MacLeod Art



**BREAKING OUT OF THE FRAME**



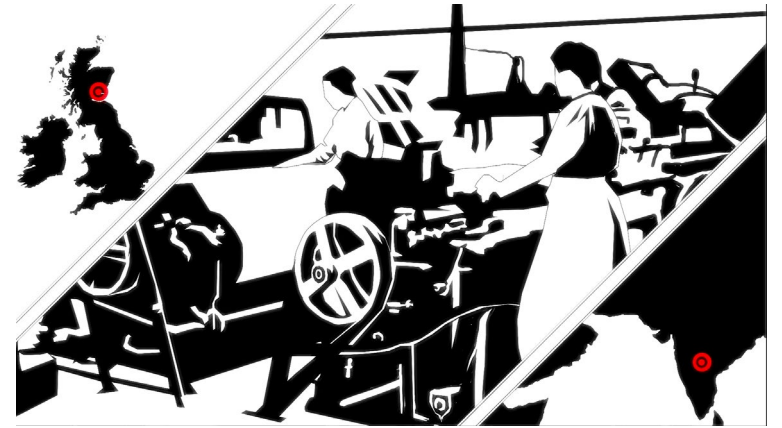
# BOOTF

*Breaking out of the Frame* was projected onto the factory-building wall and was crowd controlled, the audience/players ran left and right to collectively control Pinkie as she collects ZX Spectrum computers. It was a site-responsive game, we incorporated the architecture of the site into the design by projecting onto the factory's reception window. Every ZX Spectrum collected is animated to wipe a row revealing a third of an image hidden behind the background. These images show various episodes in Dundee's history and that this history is not fragmented but a continuous narrative of specialised and skilled labour passed on from generation to generation. This labour was transferable, so it allowed for the industries to adapt, grow and morph into one another. This was reinforced by the visuals where the images succeed one another: the shipbuilding industry transforms into the whaling industry, followed by the jute industry and finally the electronics industry with Timex and NCR as the main employers. The final image was an image of Dundee with a 'Welcome to She-Town' neon sign, thus bringing together all the narrative threads and themes of the event. The wiping action worked at a symbolic level as well, a symbolic mechanic that captures the essence of the project: the past is uncovered through movement.

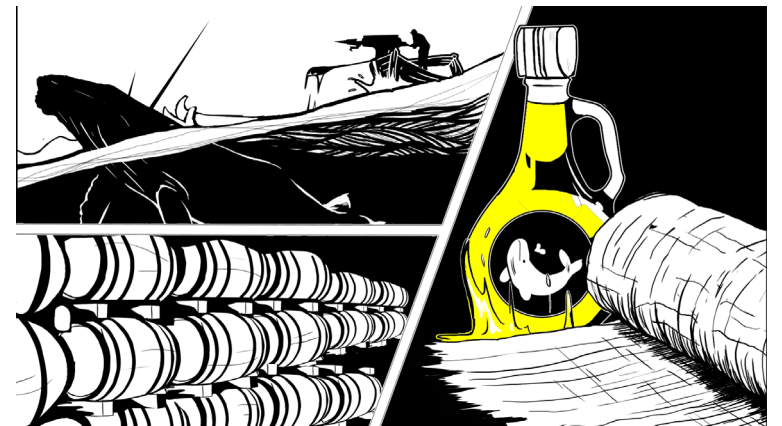
The physical stubbornness of a found projection 'screen' would pierce through the image and add a particular type of texture and materiality to it thus contributing to the overall aesthetic. At the same time, by projecting the game onto the factory would contribute to the overall conceptual framework: the palimpsestic nature of site (Turner, 2004) where all the previous layers of 'writing' are uncovered during the process of 'reading', 'writing', 'moving', and 'playing' the game.

*BootF* brought all my lines of artistic research together. It is the epitome of convivial gameplay which generates togetherness and community; it is spectacular and accessible, inviting everyone to play along; it is performative and through its symbolic and expressive mechanics holds the potential for transformation; it transforms gameplay into an embodied narrative experience as the moving bodies of the players drive it forward; its design aimed to respond to a story but also to a site, constantly adapting to both; and finally it emphasised a truly collaborative, fluid and playful working process showcasing the potential of interdisciplinary design methods and creative communities.





Kayleigh MacLeod Art









# DESIGNING THE FINALE

After the game the audience/players settled into a spectator role as they watched a 30-minute site-responsive projection on the building. The film consisted of archival footage from STV (Grampian TV) of Sir Clive Sinclair's visit to Timex for the celebration of the 1 millionth Spectrum. This was accompanied by photographs from the Spectrum assembly lines and scored by seven audio interviews that I had conducted with game developers. In the interviews the developers, Mike Dailly, Paul Farley, Douglas Hare, Chris van der Kuyl, Andrew and Philip Oliver, Danny Parker and Erin Stevenson, focused on the impact of the ZX Spectrum on their individual careers and also on the games industry at large. The developers acknowledged the impact of the female labour on the industry and expressed their gratitude to the women of Timex

The event concluded with Sheena Wellington's song *Women o Dundee* (1990), performed by three community choirs (comprised entirely of women) lead by Alice Marra. The women singing were carrying positive picket-signs which referenced the picket signs used during the strikes, and were made by inter-generational groups during two workshops, one in the Douglas Community Centre and one at the Hot Chocolate Trust headquarters. We wanted the workshops to facilitate inter-generational dialogue around an activity related to Timex. We decided that making picket-signs would be a fun activity accessible to all ages and skill levels.

Picket-signs were closely associated with the Timex strikes which is why we wanted to subvert the expectations by playing with the picket-sign messages. The picket-signs which were held up at the former Timex factory on the 4<sup>th</sup> of May 2018 were very different to the ones held up in the same place 25 years earlier. By inviting the audience/players to have a closer look at the signs and discover these new positive messages, we also prompted them to take a closer and more attentive look beyond the strikes and positively rewrite the site by shifting the focus from the strikes to the women workers, their labour, and its impact on the city.

The picket signs were painted in bright and bold colours in large letters or symbols and were conveying messages of solidarity with the women of Dundee and women in games, reflecting the city's past and present industries and achievements (jute, Timex, games) or the Spectrum aesthetic and pixel-art style.





Erika Stevenson  
Photography



# DESIGNING THE PROJECTION



Erika Stevenson Photography

I wanted the projection to respond to the specificity of the site which is why I worked with Robin Griffiths to design an animation which could be mapped onto the window like a frame.

A conveyor belt was running underneath the main frame, where archival photographs rolled in and assembled to the sides as collages of images. The main 'screen' would be used for showing the archival footage, so Robin designed a ZX Spectrum-inspired frame (Figure 117) which foregrounded the edges of the image.

On a conceptual level the framed nature of the image draws attention to its 'staged' nature inviting the audience/players to challenge it, and question what has been left outside of the frame. The Timex visit was a staged event just like its edited documentation: particular aspects were emphasised whereas others were left out. By foregrounding the frame, I wanted to draw attention to the mediated nature of the footage.

The two frames disrupted each other and drew attention to their 'fiction', constantly reminding the audience/players of the mediation of the image. Projecting the spaces from inside the Timex factory filmed almost four decades before onto its facade forces the two timeframes and narratives to collide. The image was physically pierced by the window frame and the brick wall as it 'moulded' onto the surface. The archival footage was not simply superimposed on a surface, rather it merged with it creating a hybrid surface, or a hypersurface (Giannachi, 2004) which melted image into surface to a degree in which neither could be distinguished from the other.



4th May

- Boomerang gif from video

Dizzy Games  
Sending audio (cleaned up)



area for videos



Conveyer Belt

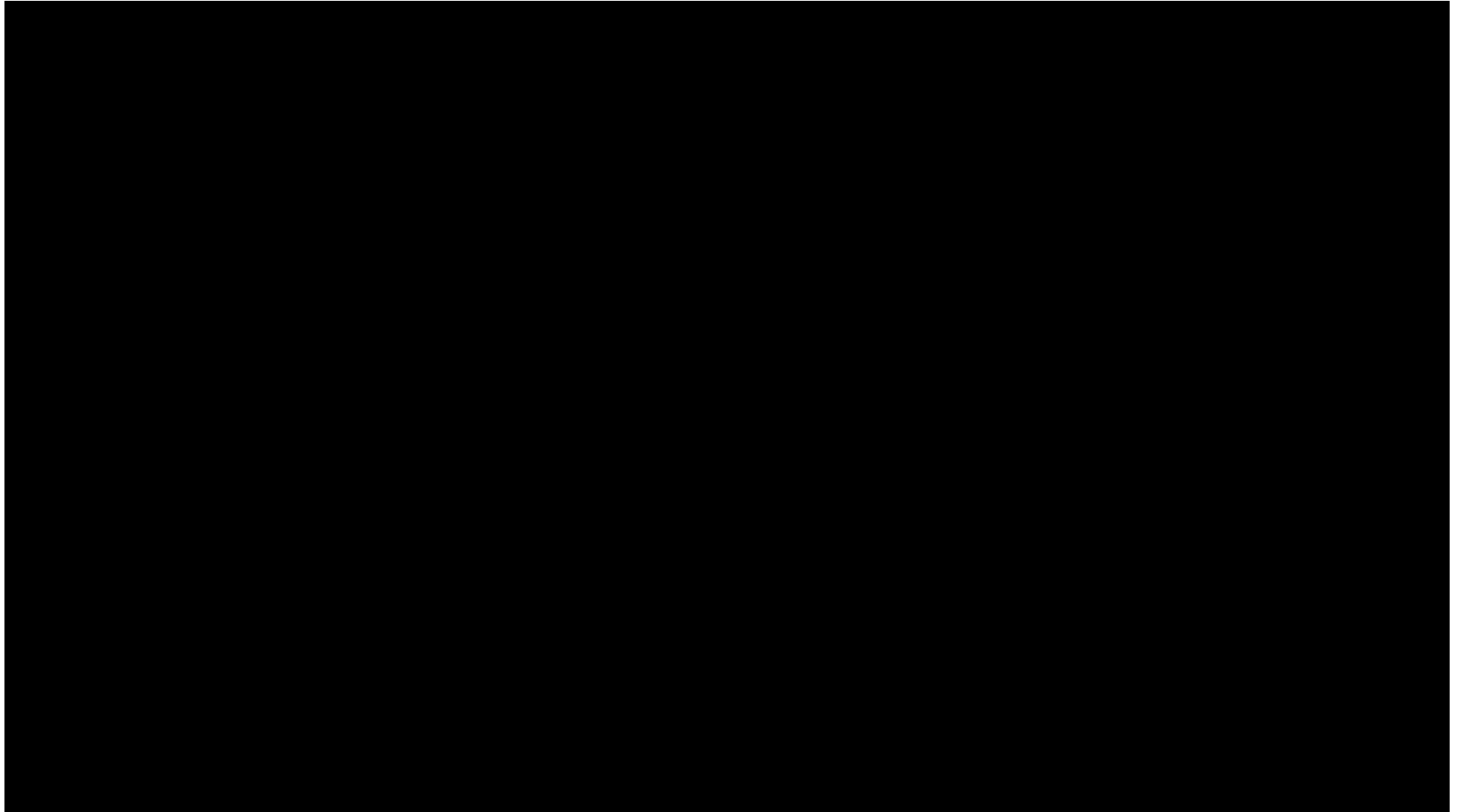
Photos from factory

Bits of Zx Spectrum



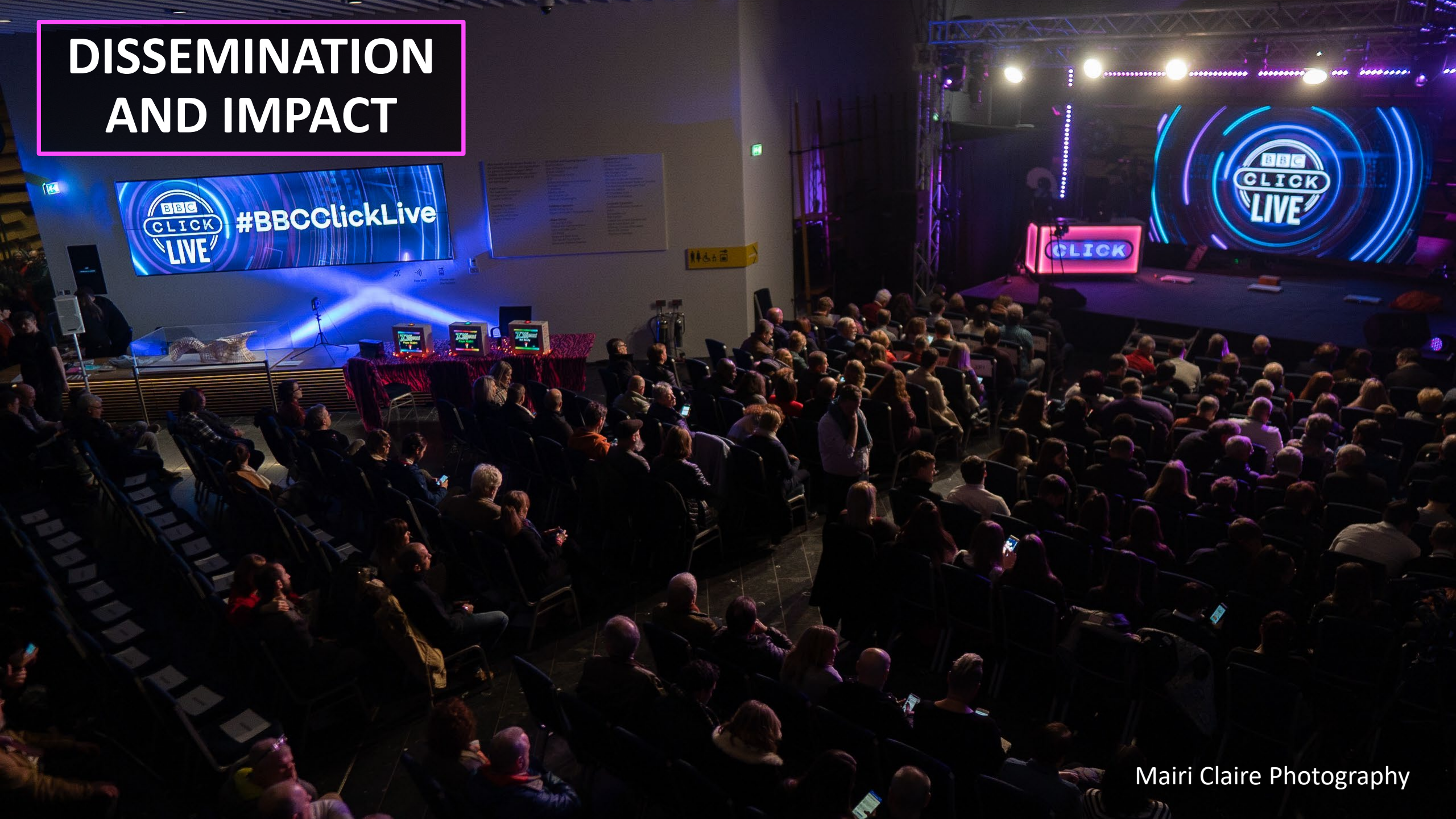


# VIDEO



The walkthrough from the event can be viewed at the following link: <https://www.performingplay.co.uk/walkthrough-1>

# DISSEMINATION AND IMPACT



Mairi Claire Photography



Design  
forlife

Supported by UNESCO City of  
Design, Dundee

## Inspiring a generation

Mona Bozdog, a PHD student at Abertay  
tells us about her project which looks at the  
women who changed the face of Dundee

When I started my PhD at Abertay, the first thing I wanted to find out was why the city is so famous for games and technology.

Many of the answers revolved around Timex and the ZX Spectrum computers which were assembled there. There's the urban legend of computers which "fell off the back of the lorry".

The truth is employees got a discount on the computers, so many were bought across Dundee. It also helps that Dundonians take great pride in supporting their local industries. At one point, legend has it, almost every home in the city had a ZX Spectrum.

This year marks the 25th anniversary of Timex leaving the city, so I felt that an acknowledgement of the tremendous impact that the labour of these wonderful women had on the video games industry, and Dundee, is long overdue.

Their work has been largely overshadowed by the impact of strikes. I really wanted for this story to be told, and for it to be told by them.

So, I decided to interview female workers from the Timex factory about their work and their workplace, collecting their memories of the company. I wanted to foreground that link between the women of Timex and the prevalent video games industry. Many of them are not aware of the impact they have had on the city and it's a shame that a lot of them have passed away without realising it.

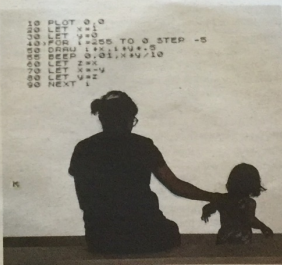
This story is also one of regeneration – Dundee continuously reinvents itself. This year I asked a lecture theatre full of students the same question: do you ever think why you are studying games in Dundee, instead of London or Edinburgh? And they don't.

Perhaps that's because we've connected Dundee and the industry so closely that nobody questions it, it's just another episode in the city's history of regeneration and economic growth.



ZX Spectrum

Clockwise from top: A Sinclair ZX Spectrum computer, inside the Timex factory; a badge worn during the workers' strike; Google on ZX Spectrum's anniversary in 2012; and an exhibition based on and using ZX Spectrums at the DCA Dundee in 2016 (picture by Kris Miller).



Generation ZX(X) has received extensive media coverage, interviews and pieces about the research project have been published by the BBC, The Courier, The Evening Telegraph, and The National.

### The BBC

- [https://www.bbc.co.uk/news/resources/idx-sh/dundee\\_the\\_city\\_with\\_grand\\_designs](https://www.bbc.co.uk/news/resources/idx-sh/dundee_the_city_with_grand_designs)

### The COURIER

- <https://www.thecourier.co.uk/fp/news/local/dundee/638133/generation-zxx-massive-open-air-event-to-celebrate-hidden-figures-of-dundeess-computing-history/>
- <https://www.pressreader.com/uk/the-courier-advertiser-five-edition/20180419/281913068706390>

### The EVENING TELEGRAPH

- <https://www.eveningtelegraph.co.uk/fp/dundee-people-dundee-students-year-of-research-culminates-in-event-recognising-the-women-of-timex/>
- <https://www.eveningtelegraph.co.uk/fp/memories-of-dundee-timex-factory-to-be-brought-back-to-life/>

### The NATIONAL

- <https://www.thenational.scot/news/16172003.art-tribute-to-workers-25-years-after-timex-strikes/>





## Showcase:

- V&A Dundee Launch 2018
- BBC Click Live 2019-2020

## Dissemination:

- Panel - Playing in Im/Material Worlds: virtual encounters with material worlds organized by Im/Material Network (University of Glasgow, The Royal Society of Edinburgh) – Abertay University, May 2019
- Develop Research - Brighton, July 2019
- Res/Fest Dundee – V&A Dundee, Nov 2019
- Transnational Scotland- Fisheries Museum, Anstruther, Nov 2019
- The Royal Conservatoire of Scotland, Research Exchange Talks (Oct 2020)



# TEAM

## Design and Production

Mona Bozdog – Concept, Design & Production

Clare Brennan – Creative Producer

Dayna Galloway – Designer

Niall Moody – Games Coordinator

Robert Clark – Sound Design

Susie Buchan – Production Support

Dan Faichney – Production Support

Robin Griffiths – Projection and Art

Kayleigh MacLeod - Art

Alice Marra – Live music coordinator

Cara Pearson – Pinkie Character Design

## Stewarding:

Moayed Alorfali – Head Steward

Helen King

**Installation Design:** Niall Moody, Mona Bozdog & Dayna Galloway

**Arcade cabinets** courtesy of We Throw Switches

**Arcade cabinets design:** Alice Carnegie and Ursula Chung

## The Games

### ***Breaking out of the Frame***

- Development: Niall Moody
- Art: Kayleigh MacLeod

### ***Assembly and She-Town***

- Development: Retrospect
- Joy Ajuong,
- Marc Philippe Beaujean
- Robert Clark
- Sean Connaghan
- Courtney Kirk
- Phillip McCafferty
- Cara Pearson
- Jordan Ross

# SPECIAL THANKS

Loadsaweeminsinging for the recordings of *The Women of Dundee* by Sheena Wellington and *Alice's Song* by Ricky Ross.

NEoN Digital Arts Festival, Creative Scotland, Weave by Abertay, Abertay Game Lab, Abertay University, The Royal Conservatoire of Scotland, John Bruin, Laura Bissell, Alistair MacDonald, Iain Donald, Donna Holford-Lovell, Wendy Robb, Kenny McAlpine, Dundee City Council, JTC Furniture Group, We Throw Switches, TIMEX History Group, Charlie Malone, Alice Marra and Loadsaweeminsinging, John Gray (Public Art) - Dundee City Council, Douglas Community Centre and Library Communities Department - Dundee City Council, Dighty Connect's Mosaic Group, John Carnegie and Alan Spence, Gerald High, Hot Chocolate Trust, The Dundee Rep, The DC Thomson Archives, Dundee City Council - Dundee's Art Galleries and Museums, STV, Paul Farley, Douglas Hare, Danny Parker, Philip and Andrew Oliver, Mike Dailly, Chris van der Kuyl, Erin Stevenson, Robin Sloan, Lynn Parker, Rob Page, Erika Stevenson and all the lovely ladies who shared their stories with me: Helen Brennan, Ann Crawford, Elizabeth Docherty, Ellen Fleming, Margaret Hogg, Kathleen McKinnon, Lyn Spiljard and the ladies who wished to remain anonymous (you know who you are).

Thank you!